

regions, and Professor Hudson, of Plattsburgh, told me last year that he had found it a few miles south of that city, near the shores of Lake Champlain.

Persistent search on the Vermont side of the lake failed to show the parasite until this summer. Mr. W. W. Eggleston, of Rutland, wrote me in June that he had at last discovered it in a spruce swamp near that city. Early in August I visited a large black spruce swamp on the south end of the Alburgh peninsula, which divides the northern end of Lake Champlain into two arms. Here, at last, my own search was rewarded. A considerable per cent of the black spruce trees showed abnormal growths or "Hexenbesen" (witches' brooms). These abnormal branches, in all cases examined, were hosts of the *Arceuthobium*. No flowering or fruiting specimens of the parasite were observed at this time.

Upon again visiting the swamp the last week of September to obtain these, a similar "Hexenbesen" was observed in a medium-sized specimen of the tamarack, *Larix Americana*. Examination of this revealed scattering plants of *Arceuthobium* upon the deformed branches. The relative number of these upon the tamarack in proportion to the size of the "Hexenbesen" was small, however, probably not above one per cent of that found upon similar spruce branches. The individual plants of the parasite were of about the size and appearance of those found on the spruce. No fruiting plants occurred.

Time did not permit of much further search, and no other "Hexenbesen" was observed on tamarack. A photograph of the infested tamarack branch was made and is communicated with this article.

A number of herbarium specimens were taken of the parasite as it occurs on spruce, and I shall be glad to send these upon request to botanists who are interested in this curious plant.—L. R. JONES, Botanical Laboratory, University of Vermont.

EXPLANATION OF PLATE 14.—Witches' broom formed on *Larix Americana* as a result of the parasitism of *Arceuthobium pusillum*; from a photograph.

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FURTHER NOTES UPON THE DISTRIBUTION AND HOST PLANTS OF *ARCEUTHOBIUM PUSILLUM*.—When the 6th edition of Gray's Manual was published in 1889, the tiny parasite *Arceuthobium pusillum* was known only from the Adirondacks, Hanover, New Hampshire, and Pocono Mountain, Pennsylvania. It now appears, however, to be

rather common in the northern half of New England, and the fact that it has been so long overlooked is doubtless due on the one hand to its small size, and the other to its peculiar mode of growth upon branches of trees and often out of reach. At Hanover, New Hampshire, it was discovered by Professor Jesup, and grew upon the black or swamp spruce (*Picea nigra*, Link). Knowing the plant well at that station, some ten years ago, the writer has since spent much time in searching for it in Vermont, and was finally rewarded, May 6, 1899, by finding a new station at Pittsford, Rutland county. It was there growing on the black spruce in a small swamp, which had been searched several times before.

In June the writer found the *Arceuthobium* again on Bald Mountain, Mendon, at about 2,200 feet altitude, and in this case upon the red spruce (*P. rubra*, Link).

Prof. L. R. Jones' interesting discovery of the species at Alburgh, Vermont, on the black spruce, and later upon the tamarack (*Larix Americana*, Michx), is described in his article published above.

President E. Brainerd has since found the *Arceuthobium* on the black spruce at Ripton, Vermont, and Prof. C. E. Peck tells me that it has been sent to him from the Adirondacks this fall on the branches of the white spruce (*P. alba*, Link). Although it has thus been observed upon no less than four species, the writer believes that it occurs chiefly on the black spruce. — WILLARD W. EGGLESTON, Rutland, Vermont.

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ARCEUTHOBIUM PUSILLUM IN THE ST. JOHN AND ST. LAWRENCE VALLEYS. — Late in September last, while crossing a low spruce swamp near Fort Kent in northern Aroostook county, Maine, the recollection of Dr. von Schrenk's interesting discovery of the dwarf mistletoe in the southern part of the state occurred to me, and I thought: "Why shouldn't I find *Arceuthobium*, too?" Instantly, upon looking up, I saw a sickly black spruce loaded with the small fruiting parasite. The plant covered many of the small black spruces; but though the white spruces, firs and hackmatacks were carefully examined, none of them seemed to harbor the mistletoe. Nor was any strong tendency to *Hexenbesen* seen in the affected trees, such as has been noted in other regions by Dr. von Schrenk and Professor Jones. The only marked effect of the parasite upon the host-trees was a tendency to produce unusually slender branchlets and yellowish foliage.